11:00

EXCIMER LASER CORONARY ANGIOPLASTY OF SAPHENOUS VEIN GRAFTS.

William Untereker, Gary Roubin, James Margolis, Geoffrey Hartzler, John Bresnahan, Donald Rothbaum, Spencer King, Michael Cowley, Frank Cummins, Ronald White, Kenton Gregory, Kenneth Kent, William Spencer, Richard Haskell, Frank Vawter, Elizabeth Hart, Frank Litvack. Philadelphia Heart Institute, Philadelphia, Pa.

Excimer Laser Coronary Angioplasty (ELCA) was used to treat 127 saphenous vein graft (SVG) lesions in 108 patients (pts.) in the ELCA registry. There were 81 male and 26 female pts with mean age 63 years (range 40-86yrs). Thirty-seven grafts were to the right coronary artery, 52 to the left anterior descending, and 38 to the left circumflex.

Lesion locations were proximal in 26, body in 76 and distal anastomosis in 25. One hundred two lesions (80%) were in SVG's 2 or more years old. Procedure success rate (< 50% final stenosis) was 96% (122/127). Thirty-seven percent of the procedures (48/127) utilized laser stand alone. Lesion severity was 85% (34-100) pre-laser, 43% (0-95) post laser and 23%(0-100) post-balloon. Complications included: myocardial infarction 2, perforation 2 (without sequelae). dissection 5, spasm 2, acute occlusion 4, and thrombosis in 6 pts. No deaths or emergency CABGs resulted.

Eight of the 45 patients with 6 month follow up have required further intervention (6 PTCA, 2 CABG). Of the remaining 37, 18 have been restudied angiographically with 10 of 18 showing restenosis.

CONCLUSIONS: 1) ELCA can be performed safely and with high primary success rate in a series of SVG lesions which are predominantly old, and high risk; 2) Restenosis is a persistent problem in early ELCA results.

11:15

DIRECTIONAL CORONARY ATHERECTOMY FOR SAPHENOUS VEIN GRAFT STENOSES

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Directional coronary atherectomy (DCA) was performed for 87 lesions of saphenous vein grafts (SVG) in 76 patients for the first time between April 1988 and June 1990. Mean age of the grafts was 7.0 ± 3.8 years old and 52% of lesions had previously been treated with angioplasty. The success rate was 91% per procedure and 91% per lesion. Success rates for each location are as follows; ostial (n=13) 81%, body (n=69) 93% and distal anastomosis (n=2) 100%. Complications were the following: death 0%, perforation 0%, bypass surgery for vessel occlusion 1.3%, Q wave myocardial infarction (MI) 1.3%, non-Q wave MI 7.9% and angiographic embolization 6.9%. Distal embolization, defined as either angiographic documentation or the presence of MI, occurred in 11.5%. Angiographic follow-up was available for 52 lesions. Restenosis defined as a greater than 50% stenosis was observed in 59.6% (46.2% for de novo lesions and 73.1% for restenosis lesions (p=0.09)). When compared with 412 electively treated lesions in the native arteries, there was no difference in the success rates or surgery rate. The restenosis rate was higher (60% vs 37% p=0.004) and angiographically documented distal embolization was higher (6.9% vs 0% p=0.01) for SVG.

In conclusion, although acute outcome of DCA for SVG is quite favorable in selected cases; however, restenosis remains a limitation particularly for vessels previously treated with angioplasty.

11:30

THE EFFECT OF ANGIOGRAPHIC RISK FACTORS ON THE OUTCOME OF DIRECTIONAL CORONARY ATHERECTOMY

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The purpose of this study is to evaluate the effect of angiographic morphology on the outcome of directional coronary atherectomy (DCA). Coronary angiograms were evaluated for lesion characteristics according to AHA/ACC criteria. DCA was performed on 499 lesions in 441 procedures electively for the first time between April 1988 and June 1990. The overall success rate was 88% per lesion and 87% per procedure and major complications (bypass surgery, Q wave MI or death) were observed in 4.1% of procedures.

Angiographic Risk factors	Absent		Present	(n)
Eccentricity	90%		86%	(241)
Calcification	92%	p<0.001	69%	(83)
Abnormal contour	88%		92%	(71)
Ostial lesion	88%		89%	(65)
Diffusely diseased vessel	89%	p<0.01	79%	(65)
Length >10mm	90%		85%	(115)

The number of lesions with other risk factors (tortuosity, angulation, thrombus, total occlusion) was less than 50 and there were no differences in their outcome. Cumulative effects of these risk factors on success rates were as follows; none: 96% one: 89% two: 83% three or more: 84% (p=0.02).

In conclusion, DCA is effective for the treatment of eccentric, ostial, moderately lengthy lesions or lesions with abnormal contour but is less effective for the treatment of calcified lesions or lesions in diffusely diseased vessels. The success rate remained acceptable despite multiple angiographic risk factors.

11:45

ABRUPT CLOSURE FOLLOWING DIRECTIONAL CORONARY ATHERECTOMY: CLINICAL, ANGIOGRAPHIC AND PROCEDURAL OUTCOME

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From October 1, 1986 to December 31, 1989, directional coronary atherectomy (DCA) was performed during 1018 procedures (1138 lesions) at one of 8 clinical centers. Abrupt closure (AC), defined as total coronary occlusion or subtotal coronary occlusion with ongoing myocardial ischemia, developed in 43 (4.2%) pts. AC occurred during DCA in 31 pts and 0.25-24 hours following DCA in 12 pts. By univariate analysis, AC was higher during DCA of the right coronary artery (p= 0.015), with de novo lesions (p < 0.001), and with eccentric lesions (p= 0.08). AC was also inversely related to the number of specimens retrieved (p= 0.031) and tended to be lower during DCA of saphenous vein grafts (p=0.08). AC was associated with severe angina in 27, hypotension in 9, and myocardial infarction (MI) in 29. In addition to thrombotic occlusion, angiographic evidence of severe coronary dissection was present in 17 (staining, 7; no staining, 10), distal embolization in 7, coronary spasm in 3, sidebranch closure in 1, and coronary perforation in 1. Direct emergency CABG was performed in 11 pts (1 death) and "bailout" PTCA attempted in 29, 15 of which resulted in initial clinical and angiographic improvement (1 late death, 4 MI). In the 14 pts without improvement following "bailout" PTCA, 13 underwent successful CABG. We conclude that abrupt closure following DCA is 1) relatively infrequent, approximating the incidence of that following balloon angioplasty and 2) more likely to occur in the right coronary artery and with de novo lesions.